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IS : 7394 - 1984
(Reaffirmed 1999)

Indian Standard
SPECIFICATION FOR PLASTICS CONTAINERS FOR RESERVE FUEL
(*First Revision*)

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BUREAU OF INDIAN STANDARDS
MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG
NEW DELHI 110002

Gr 3 *July* 1984

AMENDMENT NO. 1 JUNE 2003
TO
IS 7394 : 1984 SPECIFICATION FOR PLASTICS CONTAINERS FOR RESERVE FUEL

(First Revision)

(*Page* 3, *clause* **0.3**) — Insert the following new clause after clause **0.3**:

'**0.4** A scheme of labelling environment friendly products with the ECO logo has been introduced at the instance of the Ministry of Environment and Forests (MEF), Government of India. The ECO-Mark is being administered by the Bureau of Indian Standards (BIS) under the *BIS Act*, 1986 as per the Resolutions No. 71 dated 21 February 1991 and No. 425 dated 28 October 1992 published in the Gazette of the Government of India. For a product to be eligible for marking with the ECO logo, it shall also carry the ISI Mark of the BIS besides meeting additional environment friendly requirements. For this purpose the Standard Mark would be a single mark being a combination of the ISI mark and the ECO logo.

This amendment is based on the gazette Notification No. 170 dated 18 May 1996 for plastic products as environment friendly products published in the Gazette of the Government of India. This amendment is, therefore, being issued to this standard to include environment friendly requirements for Plastics containers for reserve fuel.'

(*Page* 5, *clause* **5.6**) — Insert the following new clauses after **5.6** and renumber the subsequent clauses:

'6 ADDITIONAL REQUIREMENTS FOR ECO-MARK

6.1 General Requirement

6.1.1 The product shall conform to the requirements for quality, safety and performance prescribed.

6.1.2 The manufacturer shall produce to BIS the consent clearance as per the provisions of *Water (Prevention & Control of Pollution) Act*, 1974 and *Air (Prevention & Control of Pollution) Act*, 1981 along with the authorization, if required under *Environment (Protection) Act*, 1986 and the Rules made thereunder while applying for the ECO-Mark. The manufacturers of plastic wares shall produce documentary evidence with respect to the compliance of regulation under *Drugs and Cosmetic Act*, 1940 and the Rules made thereunder, wherever necessary.

6.1.3 The product must display a list of critical ingredients in descending order of quantity present expressed as percent of the total. The list of such ingredients shall be identified by Bureau of Indian Standards.

6.1.4 The product packaging shall display in brief the criteria based on which the product has been labelled as 'Environment Friendly'.

6.1.5 The material used for product packaging shall be recyclable or biodegradable.

6.1.6 It shall also suitably mention that ECO-Mark label is applicable only to the packaging material/package, if content is not separately covered under ECO-Mark. It may be stated that ECO-Mark is applicable to the product or packaging material or both.

6.2 Product Specific Requirements

The plastic products shall apart from fillers and reinforcing agents, be made from the minimum of 90 percent, by weight of compatible plastic wastes.

NOTE — The manufacturer shall provide documentary evidence by way of certificate or declaration to this effect.'

(PCD 21)

Reprography Unit, BIS, New Delhi, India

Indian Standard

SPECIFICATION FOR PLASTICS CONTAINERS FOR RESERVE FUEL

(First Revision)

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(*Continued on page* 2)

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(*Continued on page* 10)

Indian Standard

SPECIFICATION FOR PLASTICS CONTAINERS FOR RESERVE FUEL

(First Revision)

0. FOREWORD

0.1 This Indian Standard (First Revision) was adopted by the Indian Standards Institution on 29 February 1984, after the draft finalized by the Plastics Containers Sectional Committee had been approved by the Marine, Cargo Movement and Packaging Division Council.

0.2 This standard was first published in 1974 covering containers of 5 litres nominal capacity. The present revision includes containers of 10 litres nominal capacity also. The standard has been revised thoroughly with respect to various tests and their requirements to bring it in line with the overseas standard.

0.3 The plastics containers covered in this standard, made of special grades of HDPE compatible with petroleum products, are suitable for storage and transport of petroleum fuels.

0.4 For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a test, shall be rounded off in accordance with IS : 2-1960*. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

1. SCOPE

1.1 This standard applies to portable plastics containers of nominal capacities 5 and 10 litres for the storage and transport of petroleum fuels, but excludes containers which are integral with or attached to any vehicle or object.

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*Rules for rounding off numerical values (*revised*).

2. TERMINOLOGY

2.1 For the purpose of this standard, the definitions given in IS : 7019-1982* and **2.1.1** and **2.1.2** shall apply.

2.1.1 *Pouring Spout* — A spout so designed and constructed as to possess the property of maintaining a curved set applied to it by the user of the unit to aid pouring.

2.1.2 *Petroleum Fuels* — Liquid petroleum products commonly burnt for the generation of heat or light or used in an engine.

3. MATERIAL

3.1 The containers and their closures and inserts shall be made from the following grades of HDPE (*see* IS : 7328-1974†):

Containers	HDPE 42 BB.
Closures or caps	HDPE 43 MB (Red colour pigmented)
Inserts	HDPE 45 MA

3.1.1 The inserts may also be made from LDPE.

4. DESIGN

4.1 Closure — The closure design shall provide for its closing without the use of tools and such that the containers are vapour-tight and liquid-tight and withstand leakage test prescribed in Appendix A after the closure is fully tightened by hand.

4.2 Filling Orifice — The filling orifice of the containers shall have minimum internal diameter of 25 mm. The threads provided on the neck shall be not finer than 6 per 25 mm.

4.3 Handle — The containers shall be equipped with a handle having a comfortable grip and located in such a manner that it may be used for both carrying and pouring.

4.4 Brimful Capacity — The brimful capacity of the containers shall be at least 10 percent greater than the nominal capacity.

4.5 Wall Thickness — The minimum wall thickness at any point of the containers shall be not less than 0·20 mm for containers of 5 litres capacity and 0·3 mm for containers of 10 litres capacity.

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*Glossary of terms in plastics and flexible packaging, excluding paper (*first revision*).

†Specification for high density polyethylene materials for moulding and extrusion.

5. TESTING

5.1 In all tests using a complete, container the closure shall be tightened to a torque of 5 Nm. Unless specified otherwise, previously untested containers shall be used for each test.

5.2 Closure Leakage Test — The container shall pass the test prescribed in Appendix A.

5.3 Drop Test — When tested by the methods described in Appendix B, the containers shall remain intact and show no sign of rupture or leakage.

5.3.1 Minor seepage from any closure which is stopped by hand tightening of the closure shall not constitute a failure.

5.4 Storage Test

5.4.1 When the containers are tested by the method described in Appendix C, the loss of mass from each container shall not exceed 3·5 percent and all surfaces shall be free of tackiness or other obvious defect.

5.4.2 The containers after the test shall be emptied and refilled to their nominal capacity with water at ambient temperature and subjected to the drop test from a drop height of 2 m in accordance with the details described in Appendix B. The containers shall not show any sign of rupture or leakage.

5.5 Test for Environmental Stress—Crack Resistance — When tested by Method I of IS : 8747-1977*, the containers shall show no evidence of stress cracking or leakage after being kept in the oven for 5 hours.

5.6 Test for Handle Strength — When tested by the method described in Appendix D, there shall be no damage to the handle or container.

6. MARKING

6.1 The containers shall be embossed with the following information :

a) Manufacturer's name or registered trade-mark,

b) Nominal capacity in litres, and

c) Month and year of manufacture.

The information shall be in capital letters, and the letters and numerals shall have a minimum height of 6 mm.

---

*Methods of tests for environmental stress—crack resistance of blow-moulded polyethylene containers.

6.2 A printed tag bearing the following cautionary information shall be affixed to the handle or body of the containers :

CAUTION

FUEL ONLY—HIGHLY INFLAMMABLE

Not suitable for racing fuels.

Store under cover.

6.3 The product may also be marked with Standard mark.

The use of the Standard Mark is governed by the provisions of the *Bureau of Indian Standards Act*, 1986 and the Rules and Regulations made thereunder. The details of conditions under which the licence for the use of Standard Mark may be granted to manufacturers or producers may be obtained from the Bureau of Indian Standards.

7. SAMPLING

7.1 Samples of the containers shall be drawn and conformity of the lot to this specification determined as prescribed in Appendix E.

APPENDIX A

(*Clause* 5.2)

CLOSURE LEAKAGE TEST

A-0. GENERAL

A-0.1 The method helps to determine the ability of a closure (on a container) to prevent leakage due to transportational vibration.

A-1. APPARATUS

A-1.1 A vibrating table with eccentric in the vertical direction, amplitude of vibration 25 mm and frequency of vibration 8 Hz.

A-2. PROCEDURE

A-2.1 Fill the container to its nominal capacity with the product/water and close it with the usual closure in the manner in which it is intended to be used.

A-2.2 Mount the container upside down rigidly on the vibrating table for 1 hour.

A-2.3 At the end of the test period, the closure shall show no indication of leakage, loss of tightness, backing-off or popping.

APPENDIX B

(*Clause* 5.3)

DROP TEST

B-1. APPARATUS

B-1.1 An adjustable device on which the container can be supported at a height of 1·5 or 2·0 m above a smooth flat concrete surface. The device shall be so equipped that it does not impede the free fall of the container' when released.

B-1.1.1 A means shall also be provided for holding the container in such a manner that when released it will fall on one corner.

B-2. PROCEDURE

B-2.1 Fill the container to its nominal capacity with water at ambient temperature and tighten the closure.

B-2.2 Drop the filled container from a height of 2 m on to the concrete surface in such a manner that it strikes flat on the bottom of the container.

B-2.3 Drop the container again from a height of 2 m on to the concrete surface in such a manner that it now strikes on a corner of the container.

B-2.4 Empty the container, filled it with a mixture of 50 percent ethylene glycol and water at 0°C and condition for 1 hour at that temperature.

B-2.5 Drop the container from a height of 1·5 m on to the concrete surface in such a manner that it strikes flat on the bottom of the container.

APPENDIX C

(*Clause* 5.4)

STORAGE TEST

C-1. Fill the container to its nominal capacity with super grade motor spirit.

C-2. Seal the closure and weigh the container and its contents accurately.

C-3. Store the container for a period of 30 days at 27± 2°C.

C-4. Determine and record the loss of mass from the container.

APPENDIX D

(*Clause* 5.6)

TEST FOR HANDLE STRENGTH

D-0. GENERAL

D-0.1 This test is for attached handles and not for integral handles.

D-1. TEST SAMPLES

D-1.1 The test shall be performed on three containers taken at random from the batch to be tested. A batch, for the purposes of this test, shall consist of one day's production or 1 000 containers, whichever is less.

D-2. PROCEDURE

D-2.1 Fill one of the containers with water to its nominal capacity and secure the closure.

D-2.2 Attach a rope to the balance point of the handle of the container leaving 300-mm slack.

D-2.3 Allow the container to fall freely for 300 mm.

D-2.4 Subject the container to two further drops.

D-2.5 Repeat the procedure with each of the other containers so that each container has been dropped three times.

APPENDIX E

(*Clause* 7.1)

SAMPLING

E-1. SCALE OF SAMPLING

E-1.1 Lot — In any consignment, all the containers of the same material, drawn from a single batch of manufacture, shall be grouped together to constitute a lot.

E-1.2 For ascertaining the conformity of the containers to the requirements of this specification, tests shall be carried out separately for each lot. The number of the containers to be sampled from a lot shall be in accordance with Table 1.

TABLE 1 SCALE OF SAMPLING AND PERMISSIBLE NUMBER OF DEFECTIVES

(*Clauses* E-1.2 *and* E-2)

LOT SIZE	FOR NON-DESTRUCTIVE TESTS		FOR WALL THICKNESS MEASUREMENT SUB-SAMPLES SIZE (NUMBER OF CONTAINERS TO BE SELECTED)
	Sample Size (Number of Containers to be Selected)	Permissible Number of Defectives	
(1)	(2)	(3)	(4)
Up to 100	5	0	2
101 to 300	13	1	2
301 to 500	32	3	2
501 to 1 000	50	5	3
Over 1 000	80	7	5

E-1.3 The containers shall be selected at random from the lot. To ensure randomness of selection, methods given in IS : 4905-1968* may be followed.

E-2. NUMBER OF TESTS AND CRITERIA FOR CONFORMITY

Characteristic(s)	*Number of Tests*	*Criterion for Conformity*
Brimful capacity, filling orifice size and thread form and closure leakage	According to col 2 of Table 1	The number of defective containers for one or more characteristics does not exceed the corresponding number given in col 3 of Table 1
Wall thickness	According to col 4 of Table 1	All the containers satisfy the relevant requirements

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*Methods for random sampling.

(*Continued from page* 2)

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